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# Managers' External Social Ties at Work: Blessing or Curse for the Firm?

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# Managers' External Social Ties at Work: Blessing or Curse for the Firm?


## Abstract

Existing evidence shows that decision makers' social ties to internal co-workers can lead to reduced firm performance. In this paper, we show that decision makers' social ties to external transaction partners can also hurt firm performance. Specifically, we use 34 years of data from the National Basketball Association and study the relationship between a team's winning percentage and its use of players that the manager acquired through social ties to former employers in the industry. We find that teams with "tie-hired-players" underperform teams without tie-hired-players by 5 percent. This effect is large enough to change the composition of teams that qualify for the playoffs. Importantly, we show that adverse selection of managers and teams into the use of tie-hiring procedures cannot fully explain this finding. Additional evidence suggests instead that managers deliberately trade-off private, tie-related benefits against team performance.



Keywords: social relationships; social capital; principal-agent relationship; worker allocation; basketball

JEL-Classification: D82, M51, Z13

## 1 Introduction

A person's social relations are a key influence factor for her attitudes, preferences, and (economic) decision-making. When searching for a job, for example, individuals have been found to frequently rely on information and resources from their social contacts (Montgomery, 1991; Bewley, 1999; Ioannides and Loury, 2004; Jackson, 2006). In the workplace, *newly* formed social ties to others *within* the firm have been found to affect employee productivity and overall firm performance (Bandiera et al., 2005; 2008; 2009; 2010).

This paper documents field evidence on whether and how employees' *history* of social relations and experiences *outside* the firm influences firm-level decision-making and overall firm performance. We focus on a prominent form of historical, external social relationships: pre-existing, strong social ties to colleagues at a former employer in the same industry. Such ties are potentially very influential for firm-level decisions, as they create opportunities for on-going business transactions (e.g., resource acquisitions). However, the question whether tie-influenced transactions pose a blessing or a curse for the firm remains unresolved. On the one hand, external ties to others in the industry may help firm performance, as they provide superior access to relevant market information. On the other hand, it is reasonable to expect that external social ties can harm firm performance if they interfere with employees' optimal selection of transaction partners.[1]

To determine the overall performance effect of tie-influenced transactions we construct a novel dataset from an unusual but interesting industry: the National Basketball Association

[1] Bandiera et al. (2009) and Beaman and Magruder (2012) argue that social networks create network-based incentives, which lead to a form of social transfer between network contacts. This explains why individuals prefer to recommend their less able family members (instead of more able weak ties) as workers to firms. Similarly, Lawler and Yoon (1998) argue that interactions through social ties lead to greater positive emotions than interactions with strangers. Such private benefits for decision makers may distort their decision-making on behalf of the firm, and may lead to an excessive reduction in the universe of potential transaction partners, which causes a suboptimal match of resources and firms. Note that this idea is essentially an agency argument.

(NBA).[2] Specifically, we use the complete event history of the NBA in its current form (since 1977) and combine a team's record of player acquisitions and sporting performance with data on the working history of its key decision maker: the general manager. Our empirical focus lies on the performance effect of player acquisitions that the general manager[3] makes from his former employers in the NBA. Therefore, we test the null hypothesis that teams with "tie-hired-players" show identical sporting performances as teams without tie-hired-players.

Four characteristics make our unusual setting ideal to study the overall performance effect of managers' external, social ties. First, each team employs only one manager at a time who is ultimately responsible for the team's most important transactions: player acquisitions. Second, we have industry-wide information on each manager's complete working history, and the identity of his former colleagues (i.e., team owners and head coaches). In each season, this allows us to identify each manager's set of active, strong social ties to other teams in the NBA. Third, we observe the number of game appearances for each player in the industry, which allows us to measure the relative importance of tie-hired-players in team production. Finally, we observe an objective measure of team performance: the team's sporting success in the regular season.[4]

Our empirical analysis shows that the effect of tie-hired-players on team performance is negative. Based on a simple mean comparison, we find that teams with tie-hired-players underperform teams without tie-hired-players by a substantial 11 percent. Subsequent

[2] There exists a growing literature that uses sports data sets to study general economic and organizational phenomena, because they provide statistics that "are much more detailed and accurate than typical microdata samples" (Kahn, 2000; p. 75). Examples include Pfeffer and Davis-Blake (1986), Walker and Wooders (2001), Berman et al. (2002), Chiappori et al. (2002), Barden, and Mitchell (2007), Moliterno and Wiersema (2007), Holcomb et al. (2009), Aime et al. (2010), Price and Wolfers (2010), Pope and Schweitzer (2011), Berger and Pope (2011), Kocher et al. (2012), Massey and Thaler (2013), and Bartling et al. (Forthcoming).

[3] In the remainder of this paper, we use the simple term "manager" to refer to a team's general manager.

[4] A small existing literature in finance and strategic management relies on investor reactions to decision announcements as a "jury verdict" to measure the performance effect of tie-influenced decisions (e.g., Fracassi and Tate, 2012; Tian et al., 2011; Ishii and Xuan, 2014). However, the announcement of, e.g., merger decisions may cause substantial disagreement regarding the performance effect among investors (which are also known to exhibit a number of systematic valuation biases). This evaluation problem disappears in our research setting: at the end of a game, there can be no doubt which team won.

regression analyses reveal that this difference in winning percentages stems from teams' use of tie-hired-players on the court and not from (unobserved) quality differences of teams and managers: controlling for manager and team fixed-effects, a team's budget, and other observable characteristics, the average tie-hired-player reduces team performance by about 5 percent. Importantly, we show that the negative performance effect of tie-hired-players is robust across two additional social tie definitions that include up to 190 tie-hired-players.

In an extended analysis, we address the underlying mechanism for this finding and show that tie-hired-players reduce team performance only if they have been acquired in the presence of low monitoring incentives for team owners. Our estimation approach builds on different streams of psychological research (e.g., Schoorman, 1988; Shepherd et al., 2009) suggesting that monitoring incentives should be lower for an owner who personally hired a manager than for an owner who "inherited" a manager from the previous owner. Information on manager turnover in the NBA supports the idea that new owners engage in stronger monitoring: within one year of an ownership change, 48 percent of pre-existing managers are replaced. Overall, the results of our study suggest that managers deliberately use their external social ties to pursue goals other than team performance maximization.[5]

A unique feature of the institutional environment of our data allows us to address potential concerns about endogeneity bias as a source for our finding. That is, players may either be hired in the off-season period between two seasons, or after the beginning of a new season. To avoid any feedback from team performance at the beginning of the season on subsequent hiring decisions, we conduct another analysis, in which we focus only on a team's use of off-season tie-hired-players. Based on this approach, we still find a negative performance effect of tie-hired-players, and that this effect stems from tie-hired-players that the manager acquired under weak monitoring. Even when we acknowledge that off-season

[5] Importantly, we do not find evidence in our data that ownership changes reflect a previous reduction in team performance: team winning percentage in the year before the arrival of a new owner (46.3%) is virtually identical to the team's average winning percentage in all previous years under the original owner (46.8%).

tie-hired-players may be influenced by a team's performance in the previous season, we find that the performance effect of tie-hired-players is negative and depends on whether they have been acquired under weak or strong monitoring by the owner. Overall, we show that adverse selection of teams and managers into the use of tie-hiring procedures cannot fully explain our findings.

While the setting of this analysis is unusual, the results of our study have fairly broad implications. Several studies in the management and economics literature reveal that employees' external social ties influence their decision-making on behalf of the firm, for example, in connection with hiring (Fernandez and Weinberg, 1997; Williamson and Cable, 2003) financing (Shane and Cable, 2002), or investing (Cohen et al., 2008).[6] Anecdotal evidence also seems to suggest that firms often seek well-connected employees. Our industry-wide analysis shows the hidden costs of such hiring practices, and reveals the novel finding that network-based incentives can lead to discrimination of external transaction partners.[7] We also show that firms can counterbalance this form of discrimination, if they are willing to incur additional costs (e.g., in the form of extended monitoring). This second finding extends, and confirms the insights of a recent, small economic literature that shows how incentive contracts reduce workers' favoritism towards socially connected others (Bandiera et al., 2009; Beaman and Magruder, 2012; Beaman et al., 2013).

We structure this paper as follows. In the next Section, we provide a brief background on player acquisitions and managers in the NBA. In Section 3, we present our research hypothesis, and theoretical framework. In Section 4, we present our estimation approach to

[6] However, these studies do not address the performance effect of tie-influenced decisions for the firm.

[7] Few empirical studies address the negative performance effects of external social ties. However, the findings of these studies differ from ours, as they only show negative performance effects when decision makers bring their social contacts inside the firm (e.g., through job recommendations (Beaman and Magruder, 2012; Beaman et al., 2013), through mergers (Ishii and Xuan, 2014) or as supervisors to reduce monitoring (Fracassi and Tate, 2012)). As we discuss further in Section 4.2, a manager's social ties in our study do not relate to the hired player, but to the coach or owner (or both) of the player's current team. Accordingly, the manager's social ties still remain outside the boundaries of his team after a player transaction.

determine the effect of tie-hired-players on team performance. In Section 5, we present our empirical results. In Section 6, we conclude.

## 2 Background information

To follow the analysis in this paper, it is important to have some background regarding the NBA, its labor market and the role of NBA mangers. In this section, we therefore briefly discuss the nature at player acquisitions in the NBA and two key aspects of managers in the NBA: their stereotypical profile and their outside options on the labor market.

Since its merger with the American Basketball Association (ABA) in 1976, the NBA has been the only major professional basketball league in Northern America. The (combined) league initially had 22 teams in 1976/77 and has expanded since, and as of 2011, the NBA consists of 30 teams in two conferences. Each team plays 82 games over the course of a season, before the eight best teams in each conference proceed into the playoffs to determine the league champion. To increase their performance, teams compete for the most talented players on a restricted labor market.

There are two important features of player acquisitions in the NBA that distinguish them from the hiring decisions of firms in other industries. First, a team can only acquire new players from three different types of sources. These are: other teams inside the NBA, other teams outside the NBA, and the annual player draft. In the annual draft, teams are allowed to select upcoming college, high school or international players from a pool of new, young players (so-called “rookies”). Acquisitions from other NBA teams are by far the most popular choice of managers and account for 67 percent of all player-hiring decisions followed by the draft (21%) and transactions with other teams outside the NBA (12%). Thus, we can treat the NBA as a nearly closed system of extraordinarily talented workers (who generally spend their entire careers within this industry).

Second, there are two specific ways for a team to acquire players from other teams inside the NBA. First, a manager can sign a player whose contract with another team has expired as a "free-agent" by outbidding all other interested parties. This transaction type accounts for 52.1 percent of all between-team transactions.[8] Second, managers can trade their players with on-going contracts for players with on-going contracts from other teams. In this case, a single trade may involve multiple (>2) transaction partners, each potentially trading more than one player. This transaction type accounts for the other half (47.9%) of all player transactions between NBA teams. Note that this transaction type does not require the consent of the players involved.

In each team, the responsibility for player acquisitions rests exclusively with the team's (general) manager who has been hired by the team owner to act on his behalf. As we are ultimately interested in the consequences of the managers' decision-making, it is illuminating to look at these individuals more closely. We construct the stereotypical manager profile[9] by looking at a manager's average characteristics at the beginning of a new contract spell throughout our sample period (1977/78 until 2010/11). Based on this approach and the 146 active managers in this period, we can characterize the stereotypical (newly hired) manager to be 46 years old, with slightly more than two years of previous experience as a manager (where he generated an average winning percentage of 0.488), and holding up to three previous positions as general manager in the NBA. 30.1 percent of the managers had a previous history as coach and 40.5 percent of the managers had a previous history as player at the beginning of a new spell (resulting in a combined average of 50.3 percent of managers with a previous history in the NBA as a player or coach (or both) in the NBA).

[8] The exact procedure behind such free-agent signings differs slightly: in 74 percent of such signings, the player received a long-term contract, in 22 percent, the player received a short-term contract (a so-called "10-day-contract"), and in 4 percent the player was acquired by means of the expansion draft (which provides newly created teams the opportunity to recruit players from a specific set of "unprotected" players from existing teams).

[9] We thank an anonymous referee for this suggestion.

Regarding managers' possibilities of getting re-hired at another NBA team after the end of a work spell, we observe that around 31 percent take up another job as a manager in the NBA. However, as far as managers' outside options on the labor market are concerned, many managers also re-appear in the NBA in other jobs after the end of their manager career. While the exact job positions can be manifold, a considerable 41 percent of these former managers take up one of the following four positions with an NBA team: (assistant) coaches (14%), (vice) presidents (10%), advisor (9%) or scouts (8%).[10]

## 3 Research hypothesis

We assume that a team owner hires a manager to maximize team performance by acquiring the best available basketball players (subject to budget constraints). The players that the manager acquires from other NBA teams come either from former employers (we refer to such players as tie-hired-players), or from other teams (non-tie-hired-players). We test the null hypothesis that teams with tie-hired-players show identical sporting performances as teams without tie-hired-players.

**Hypothesis 1:** The sporting success of a team does not depend on its use of tie-hired-players instead of non-tie-hired-players.

In contrast to this null hypothesis, social capital (e.g., Adler and Kwon, 2002) and agency theory (e.g., Eisenhardt, 1989) predict that tie-hired-players can affect team performance. Although both theories suggest that managers use their social ties deliberately

[10] These numbers are based on an analysis for 109 inactive managers with website entries on Wikipedia.com. Note that the first two of these four positions are frequently rumoured to be even *better* paid than manager positions: some websites claim that the average manager salary was USD 1.5 million in 2009, and thus somewhat lower than the USD 2.0 million for coaches. Similarly for team presidents, there is word that the average salary is comparable to that of Fortune 500 CEOs and thus even higher (around USD 10 million in 2012). While these numbers partly lack official confirmation, they suggest that the disciplinary power of the labor market for managerial decision-making may be quite limited.

to economize on search costs, they disagree on the associated performance effect: social capital theory predicts a positive performance effect of tie-hired-players, whereas agency theory predicts a negative performance effect. In the following, we discuss each of these theories.

In the NBA, information is an important element in properly matching players to teams and positions. However, the search for better players and information comes at substantial costs for teams, which calls for mechanisms to reduce such costs. In this regard, a manager's social ties may prove valuable to his team for several reasons. Uzzi (1996), for example, notes that decision makers can reduce the high level of uncertainty in hiring decisions through fine-grained information transfer in social tie relationships. Similarly, Jackson (2010) argues that social networks allow for the mitigation of substantial search frictions, as they enable the communication of critical information to firms regarding the potential fit of workers. The use of social ties further reduces search costs, as decision makers are able to use trusted social contacts that are already in place and need not invest in constructing new ones (Granovetter, 2005). A manager who wishes to acquire the best available players in the market can thus use his strong social ties to former employers as an instrument to achieve this goal with substantially lower search costs for his team. Specifically, he can select an acquisition source through his social ties, as the relational characteristics of social ties allow for a more reliable information exchange based on trust and closeness (Moran, 2005).[11]

It is important to see that this reasoning can make the use of social ties beneficial during conceptually different acquisition procedures such as player trades and free-agent signings. That is, both acquisition procedures provide opportunities for interactions and information

[11] A manager's external ties to other teams constitute "bridging ties" (in the sense of McEvily and Zaheer, 1999), because they connect his team "to sources of information and opportunities that are not available from other network contacts" (p. 1136). Intuitively, this view implies that social ties to players' current employers provide more precise information about their playing quality, than any other form of intra-industry social ties. In contrast to Granovetter (1973), McEvily and Zaheer (1999) argue that such bridging ties are not always weak ties. Indeed, the degree of knowledge sharing between organizational units has been shown to increase with tie-strength (Tortoriello et al., 2012).

exchange through social ties. In trades, the direct transaction partner is the player's current team. In free-agent signings, the player's current team does not form the direct transaction partner (because the team no longer holds property rights over him) but can be contacted for up-to-date information about the free-agent, and his availability.

However, agency theory may also have some explanatory power in the context of tie-influenced player acquisitions in the NBA. That is, the owner-manager relationship exhibits all of the factors necessary to cause substantial agency costs. First, the owner and manager are linked by a principal-agent relationship in which the manager has been hired to act on the behalf of the owner. Second, the manager has substantially greater expert knowledge in professional basketball than the owner, which gives the manager an informational advantage: between 1977/78 and 2010/11, only 3 percent of team owners could build on a career history as player or coach in professional basketball, while a (slight) majority of 53 percent of managers could do so. Accordingly, managers can be assumed to have a substantially higher specific knowledge (most of which can be assumed to be tacit knowledge from their game experiences) about "what it takes" for a team to succeed in the NBA. Third, the owner is unable to judge the quality of a manager's search effort, as a player's fit into a team cannot be directly inferred from his performance statistics with other teams. Instead, the manager must expend substantial search effort to improve the fit. As the marginal benefit of this search effort is unobservable, the manager has the opportunity to use social ties to pursue his self-interest instead of the team owner's interest. We now provide a theoretical justification for why managers' and team owners' self-interests may not be perfectly aligned.

Researchers in the corporate governance literature have long acknowledged that the residual claims of owners are unlimited in time whereas the employment contracts of managers have limited durations by definition. As a consequence, owners have incentives to pay attention to the entire future stream of payoffs (cash, utility, prestige etc) generated by

their firm, while managers will only value payoffs yielded during their limited tenure with the firm (see Jensen & Smith, 1985, p. 11). As a consequence, managers systematically place lower value on payoffs that occur beyond their limited time horizon (see also Jensen & Meckling, 1979; Furubotn & Pejovich, 1973), which can distort their decision-making to the disadvantage of the owner.

In the context of the NBA, we find that this line of reasoning might indeed have some explanatory bite for the decision-making of managers: while managers stay, on average, for five years with a team, the corresponding tenure for owners is almost twelve years, and thus significantly larger ($t=7.18$, $p<0.001$). Moreover, owners have tradable residual claims, which allow them to capitalize on future payoffs. Accordingly, a manager will base his behavior much more on the involved search costs (which he incurs today) than on the decisions' long-term implications (which he bears only for a limited time). This reasoning stands in sharp contrast to the owner who bears the complete long-term implications (e.g., in terms of reduced future team value) of the manager's decisions. In connection with the labor market's limited disciplinary power for managers (see Section 2), suboptimal hiring decisions (from the owner's perspective) by the manager become a real possibility.[12]

Two examples for managers' self-interest maximization to the disadvantage of team owners are choices characterized by inefficiently low effort levels and the selection of inefficient transaction partners that create private benefits for the manager. In the first case, the use of social ties helps to reduce disutility from search efforts, as social relations form a salient selection criterion for prechoice activities. Such activities reduce personal workload, as they reduce the number of choice alternatives that need to be evaluated in the decision process.[13] Similarly, Levin and Cross (2004) acknowledge that managers may simply

[12] In spite of the idea that managers pursue self-interests that differ from those of owners, team owners might prefer some managers to others. That is, the owner perceives manager A to be better than manager B if A's decisions lead to smaller agency costs for the owner than B's decisions.
[13] See the discussion in Beach (1993).

approach socially tied others for convenience. This can cause better-suited players in the market to be neglected, as they are currently under contract with unrelated teams. In the second case, managers often derive additional, private utility from interactions with socially connected others. Specifically, such interactions can produce positive emotions such as feelings of pleasure and enjoyment (Lawler and Yoon, 1998; Bandiera et al., 2010) and can lead to a form of "consumption on the job" for managers. Therefore, such network-based incentives can distort the manager's cost-benefit evaluation of a transaction partner, leading again to an inefficient focus on socially tied teams in player acquisitions.[14] Again, this effect may influence managers' decision-making for player trades, and free-agent signings, alike.

We want to stress that both types of self-interest maximization can occur *although* managers have strong incentives to do well with their teams. Specifically, we acknowledge that a manager's future career depends on how well he does with his current team. However, this does *not* imply that the manager is never willing to engage in suboptimal hiring decisions. Instead, it suggests that suboptimal hiring decisions can occur whenever the increase in expected utility for the manager (as previously described) outweighs his expected disutility from a (slight) reduction in team performance. Importantly, our data suggest that managers can get away with reduced team performance much more easily than coaches: while a coach's appointment ends, on average, after 2.79 years, managers remain with a team for about five years ($t = 5.64$, $p<0.001$).

[14] See Bandiera et al. (2009) and Beaman and Magruder (2012) for analytical models that can be adopted to reflect the decision problem for managers in the NBA. Intuitively speaking, the manager has two sources of utility: a (sporting-) performance-dependent bonus if he hires a "good" player, and a social transfer (monetary or non-monetary) from transactions with socially tied others. If, all else equal, the social transfer is sufficiently high, the manager may be willing to forego the performance-based utility component, and hire a "mediocre" player (i.e., a player with suboptimal match) through his social ties.

## 4 Estimation approach

### *4.1 Data*

We construct a new dataset with all 908 team-year observations in the period from 1977/78 until 2010/11. For each season, our dataset includes information on each team's regular-season winning percentage and roster characteristics (such as payroll, total number of players on the roster, total game appearances of players, and new players on the roster). We combine this data with the complete transaction history between all teams. We obtained this information from *Sports Reference LLC*, a professional company that specializes in the collection and publication of sports data.

### *4.2 Identification of manager social ties and tie-hired-players*

We focus on a prominent type of managers' social relationships to identify their set of external social ties: the social ties to colleagues at a former employer (i.e., another NBA team).[15] Such ties are potentially very influential for managers' decision-making, as managers frequently acquire players from other teams inside the NBA. Therefore, it is reasonable to expect that managers who have started a new employment relationship continue to interact with their former employers on the market for player talent. Our data support this idea: managers are 32 percent more likely to acquire players from socially tied teams than from unrelated teams.

We identify a manager's active social tie to another team from two requirements. First, he must previously have worked for that team (as a manager). Second, the current owner or

[15] Similarly, McEvily et al. (2012) use co-working histories of lawyers to study the effect of employees' external social ties on firm growth. However, our focus on personal ties to other teams implies that we only include between-team player acquisitions in our analysis. While this procedure may seem restrictive at first glance, there is good reason to exclude drafted players. Camerer and Weber (1999), for example, show that top drafted players in the NBA play excessive minutes (relative to their performance). That is, teams often "overuse" their top draft picks, which can lead to negative performance effects. Similarly, teams may expose substantial biases that lead to financial overvaluation of top picks (see Massey and Thaler (2013) for evidence in the National Football League (NFL)).

head coach (or both) of that team continue to be his former colleagues. This second requirement stems from the observation that a manager's working history with another team may inappropriately reflect a *social* tie if none of his former colleagues continue to work for that team.[16] To operationalize, on a seasonal level, the set of active social ties to other teams for each of the 146 managers in our sample, we collect his full employment history (including work spells before 1977) and combine it with the full employment and ownership histories of head coaches and team owners, respectively.

The following example helps to clarify our identification approach: In 2004, John Nash was the manager of the Portland Trailblazers. At this point, Nash had an employment history with the Philadelphia 76ers and the Washington Wizards, and hence these were two potential candidates for his set of external, strong social ties. During Nash's time in Washington (1991–1996), Abe Pollin had been the owner of the Wizards, and he remained the owner in 2004. Thus, Nash had an active social tie to Washington in 2004.[17] However, we do not observe an active social tie to Philadelphia, as the coaches and owner he had worked with at Philadelphia during 1987–1990 had already left before 2004. Note that our procedure gives rise to non-reciprocal social ties between managers and teams: for example, the manager of Washington in 2004, Wes Unseld, did not have a social tie to Portland, as he had never worked for that team before.

To classify players into the groups of tie-hired-players and non-tie-hired-players, we use the complete record of all player acquisition decisions in our sample period. We identify a player as a tie-hired-player if a manager's social tie was involved in the player's acquisition

[16] As we show in the Appendix, our results are robust to the use of two extended social tie measures. The first measure also includes a manager's history as a coach with former teams. The second measure allows for the possibility that a manager maintains ties to all his previous employers, irrespective of whether his colleagues on the coach, manager or owner level are still with those teams (meaning that we drop the second requirement of our original identification approach).

[17] This is a very representative example for the origin of social ties in our sample. Specifically, 84.7 percent of all social ties are purely owner-related ties, while another 13.9 percent of our ties include both, the owner and the coach. Only a mere 1.4 percent (only one case) of our ties are purely coach-related ties. Therefore, we are unable to model different effects for tie-hired-players that arrived through pure coach-ties and those that arrived through pure owner-ties. We leave this important aspect for future research.

and if it is the player's first season with the new team. We focus on a player's first year for two reasons. First, teams might drop players who performed poorly in their first season, which is why using multiple years would create a survivorship bias in our estimates. In fact, only 38 percent of all tie-hired-players in our sample stay with their team for more than one season. Second, players acquire tacit knowledge and assimilate over time. Thus, a player's performance in his first season with a team promises to be a better quality measure of the hiring decision than his performance in subsequent seasons.[18] Based on this approach, and depending on the restrictiveness of the social tie definition (see the Appendix), we classify between 72 and 190 players in our dataset as tie-hired-players.

An example of a tie-hired-player is when the New Jersey Nets acquired Eduardo Najera from the Denver Nuggets on July 16, 2008. Before that, New Jersey's general manager, Kiki Vandeweghe, had worked with George Karl (the 2008 head coach of the Nuggets) and Stan Kroenke (the 2008 owner of the Nuggets) at Denver. To re-emphasize an important point: The decisive criterion for a player to be classified as a tie-hired-player is not that the manager gained first-hand information about this player during previous employment spells, but that the manager acquired the player from a team to which he had an active social tie at the time of the acquisition.

Table 1 provides summary statistics for the most important variables in our dataset. In Panel A, we show statistics on the team level. While teams had tie-hired-players in only 6 percent (N=53) of our team-year observations, the use of tie-hired-players (if present) is quite substantial: on average, all tie-hired-players on a team appear in 50 games for their teams.[19] Note from Table 1 that payroll information is unavailable for nine seasons (1977/78–1984/85,

[18] As we show in Section 5.3, however, our results are robust to an alternative analysis in which a tie-hired-player keeps his status as a tie-hired-player during all seasons of his initial contract with the new team.
[19] A closer examination of our data also shows that approximately 50 percent of all NBA teams used tie-hired-players on the court in at least one season.

and 1989/90) during our sample period, which leads to a substantially lower number of observations (N=700).

In Panel B, we show statistics on the individual manager level. Of particular interest is a manager's potential for tie-hiring decisions. We construct this number as follows: in each season, a manager has as many opportunities for tie-hiring decisions, as he has active ties to other teams. By summing up these seasonal opportunities over his career years, we obtain his total potential for tie-hiring decisions. On average, this potential is 1.39 leading to 0.50 tie-hiring decisions over the career. While these numbers are quite low, they reflect on the small number of managers who ever worked for more than one team. Therefore, Panel C provides the same statistics for the subsample of managers who ever had any ties. For each of these managers, the statistics reflect only years with active social ties. We can see that these managers account for 22 percent of all managers in our sample, had a potential for tie-hiring decisions of 6.36, and made on average two tie-hiring decisions throughout those years, which amounts to 6.7 percent of all their hiring decisions. Note that there exists substantial heterogeneity among managers, as this share is as high as 50 percent for some of them.

- Insert Table 1 here -

*4.3 Methodology*

To analyse the effect of tie-hired-players on team performance, we regress a team's sporting performance on the number of game appearances by tie-hired-players, payroll, number of players used (to account for bad injury luck), and a team's number of games played by all players. We always use the exact number of game appearances such that, for example, the use of two tie-hired-players in one game leads to two more game appearances by tie-hired-players. Importantly, we also include team and manager fixed-effects to account for the

performance effect of unobserved team and manager quality, respectively.[20] By controlling for a team's payroll, the coefficient on game appearances by tie-hired-players (*THP-games*) indicates whether a team with tie-hired-players over- or underperforms relative to what could be expected from the market valuation of its player talent in a specific season. To make payrolls comparable across seasons, we use inflation-adjusted payrolls (1986=100) in all our estimations. Note, however, that the inclusion of the payroll variable comes at a cost, as this information is not available for each season in our sample.

Our approach closely follows previous work by Szymanski (2000) and models a team's logarithmic winning percentage as a function of team-level variables (relative to their league averages in a season):

$$(1) \qquad \log(winpct)_{ts} = \beta_0 + \beta_1 \cdot \overline{THP - games_{ts}} + \beta_2 \cdot \overline{payroll_{ts}} + \\ + \beta_3 \cdot \overline{players - used_{ts}} + \beta_4 \cdot \overline{team - games_{ts}} + \alpha_t + \alpha_m + \varepsilon_{ts},$$

where the subscripts t, m and s denote teams, managers and seasons, and where $\overline{(\cdot)}$ denotes the difference between a variable and its league average in season s. The dependent variable $\log(winpct)$ is the (logarithmic) regular season winning percentage of team t in season s.[21]

The coefficient of interest is $\beta_1$ and measures the effect of tie-hired-players on team performance. By our inclusion of a team's players' total number of games played in equation (1), $\beta_1$ answers the following question: what is the performance effect of using a tie-hired-

[20] From time to time, teams relocate and re-appear in the league under a new name. However, the league treats these teams as a continuous legal entity, independent of the team name and host city. Similar to Barden and Mitchell (2007) for Major League Baseball, we adopt the league's perspective on the identification of team-units (e.g., the Oklahoma City Thunder and the Seattle Supersonics are the same team in our data).

[21] An alternative empirical approach would have been to adopt an event study design, in which team performance in matches before the hiring decision is compared to team performance in matches after the hiring decision. We decided not to adopt such an empirical design, because many hirings occur in the "off-season" period. That is, in many cases, there exists a substantial time gap between matches before and after the hiring decision, which makes this identification approach less appealing to us.

player in one more regular season game, holding the overall number of player-game appearances for the team constant. That is, $\beta_1$ measures the performance effect of the substitution of a tie-hired-player for a non-tie-hired-player on the team, as increasing the number of games played by tie-hired-players corresponds to a reduction in the number of games played by non-tie-hired-players. While social capital theory predicts that $\beta_1$ will be positive, agency theory predicts it will be negative.

## 5 Empirical results

### *5.1 Model-free evidence*

Before we turn to the estimation results of equation (1), we report the results of a model-free analysis of our data. Specifically, we compare winning percentages across the groups of teams that use tie-hired-players on the court and teams that do not.[22] We find that teams with tie-hired-players win 45.2 percent of their regular season games, while teams in the other group win 50.2 percent of their games ($t = 2.31$, $p<0.05$). This implies that teams with tie-hired-players underperform their competitors without tie-hired-players by 11 percent. This finding therefore provides initial, suggestive evidence against the null hypothesis that a team's use of tie-hired-players does not impact its sporting success.

### *5.2 Regression analysis*

Table 2 shows regression estimates for the performance effect of using tie-hired-players on the team instead of other players. In Model (M1), we only introduce team fixed-effects in the analysis, while Models (M2) and (M3) incorporate our other controls and manager fixed-effects, respectively. In contrast to the null hypothesis, all models reveal that tie-hired-players

[22] To make teams more comparable, we exclude eleven team-year observations in which a team did not acquire any new players from other teams inside the NBA. However, our results are robust to the inclusion of these observations.

reduce team performance. We emphasize that the negative performance effect of tie-hired-players cannot simply reflect adverse selection of managers into the use of social ties as an acquisition practice, because manager fixed-effects in Model M3 serve as control for each manager's time-invariant "quality type".

We find that the effect of tie-hired-players on team performance is large: on average, each tie-hired-player plays approximately 36.5 games per season. According to our estimates from Model (M3), the on-court use of one such tie-hired-player results in a 5.2 percent reduction in the regular season winning percentage. For the 50 teams that barely made the playoffs in our sample by claiming the 8th spot in their conferences, this would have resulted in 2.1 fewer regular season wins. In 64 percent of the seasons in our sample, this difference in wins would have been sufficient to drive the team ranked 8th in its conference to 9th place (thereby missing the playoffs). This finding implies that the impact of social ties on the hiring behaviour of managers can be crucial for making the playoffs.

- Insert Table 2 here -

*5.3 Alternative explanations for the negative performance effect*

While our main finding is perfectly in line with the predictions of agency theory, other explanations may come to mind. For example, in spite of the negative short-term performance, tie-hired-players might be good long-term investments. Another possibility could be that managers use their social ties to realize non-sporting benefits for the team. If this was true, our focus on sporting performance might give a downward biased view on the benefits of tie-hired-players.

According to the view that tie-hired-players are good long-term investments, managers might use their social ties to acquire players, so called "diamonds-in-the-rough" that have

great upside potential, but need some time to develop. Such hiring decisions are beneficial to the team, if their negative performance effect in the first year is more than offset by positive performance effects over the following years of their contract. To address this possibility, we perform another analysis in which we re-classify a player as a tie-hired-player if his current team acquired him via a social tie, and if he is still under his initial contract with that team. Note that this measure includes all tie-hired-players as in our main specification but also includes tie-hired-players that have already been with the team for more than one season. As Table 3, Panel A shows, the associated coefficient on the game appearances of such "long-term tie-hired-players" remains negative and statistically significant at the 10 percent level. Overall, this finding contradicts the notion that the use of social ties in player acquisitions leads to superior team performance in the longer-run.

Alternatively, it could be that managers use their social ties in acquisition decisions as a means to create non-sporting benefits for the team. To address this possibility, we consider a key non-sporting benefit: a player's reduced monetary wage cost. To determine the effect of manager social ties on player wage costs, we focus on players that were acquired as free-agents. The reason for this restriction is that for traded players, the acquiring team continues to pay the same salary that the player used to receive from his previous team. Instead, the salary of a free-agent can be freely negotiated between the player and his new team. Table 3, Panel B shows the results from a Mincer-type wage regression model, in which we model a free-agent's (logarithmic, inflation-adjusted) salary payment as a function of his age, experience, past performance and salary, as well as fixed-effects for position, and team. Importantly, we also include a variable that indicates whether the player was acquired from a socially tied team of the manager. As our results show, we do not find any significant influence from a social tie being involved on the players' salary level.

The lack of an empirical relationship between social ties and a player's salary level helps to rule out two additional alternative explanations that might come to mind.[23] First, social ties might give rise to exaggerated perceptions of player ability as a form of cognitive bias. Second, managers might view acquisitions through social ties as less risky. While the underlying mechanisms differ, both explanations imply that managers should have a higher willingness to pay for "free agents" that they acquire through social ties (conditional on observable characteristics) than for "free agents" that they acquire from unrelated teams. As already mentioned, however, the result in Table 3, Panel B does not provide evidence for this prediction.

- Insert Table 3 here -

*5.4 Extended analysis: monitoring incentives and the performance effect*

We now aim to test more directly whether the use of social ties in hiring decisions represents deliberate opportunistic behaviour by managers.[24] Our test is based on the idea that if managers maximize utility taking into account private benefits that stem from interactions with former employers, we expect that this type of opportunistic behaviour should be more pronounced when monitoring by the team owner is weak. As a consequence, tie-hired-players should be most detrimental to team performance if they were acquired under weak monitoring.

[23] We are grateful to an anonymous referee for bringing these explanations to our attention.

[24] Alternatively, it could be that managers wish to benefit the team with tie-hired-players but mistakenly make poor decisions for the team. For example, previous work has highlighted that the external social ties of decision makers can harm firm performance due to poor decision-making in response to a heightened sense of trust between socially tied actors, familiarity bias, or social conformity and groupthink (e.g., Ishii and Xuan, 2014). Similarly, social capital theorists have long acknowledged that decision makers can become overly embedded in social networks, which reduces opportunities for collaboration (Granovetter, 1985), because network contacts feel obliged to assist each other (rather than members outside the social network).

To test this prediction, we assume that a manager faces weaker monitoring if he has personally been hired by his owner than if he has been hired by a previous team owner. For example, the literature on emotional costs of failure asserts, "greater negative emotions are generated when one's own decision "causes" the onset of the negative outcome rather than when others make that decision" (Shepherd et al., 2009). This observation implies that an owner who personally hired a (bad) manager faces greater negative emotional costs from replacing this manager. In anticipation of these costs, the owner might deliberately reduce the "detection probability" of a bad manager by reducing his monitoring activity. In a similar vein, the literature on the escalation of commitment has shown that supervisors change their employee performance evaluation upwards when they were directly included in the hiring decision and agreed with the selection of the candidate (Schoorman, 1988). Our data provide support for this idea: as new owners collect more and more information over time, the share of pre-installed managers that have been replaced increases from 48 percent in the first year to 58, and 63 percent after two and three years, respectively.

Therefore, we re-estimate equation (1) but distinguish between tie-hired-players that were acquired by managers under weak monitoring, and tie-hired-players that were acquired by managers under strong monitoring. Note that the difference between weak and strong monitoring stems from the order of individuals' arrivals at the team: under weak monitoring, the manager arrived *after* the current owner, while under strong monitoring, the manager arrived *before* the current owner. Table 4 displays the associated estimation results. In line with our prediction, we find a statistically significant, negative performance effect of tie-hired-players that were acquired under weak monitoring. In contrast, we do not find a statistically significant effect from tie-hired-players that were acquired under strong monitoring. An F-test supports the impression that the coefficients for tie-hired-players across the two monitoring regimes are significantly different ($F=4.58$, $p<0.05$). Our data

shows that this finding does not simply reflect reverse causality between ownership changes and team performance: in the year before the arrival of a new owner, a team wins about 46 percent of its games, which is the same as its average winning percentage in all previous years under the original owner.

- Insert Table 4 here -

Overall, these additional findings make it unlikely that behavioural biases (such as familiarity bias, excessive trust, or distorted perceptions of player ability and acquisition risks) or overembeddedness of managers are the predominant mechanism behind the negative performance effect. Instead, we take our findings as evidence that, in line with the prediction of agency theory, managers trade off private benefits against team performance. As expected, managers are less likely to engage in such moral hazard behavior if properly monitored by the owner.

*5.5 Exploiting institutional features: addressing endogeneity*

As with all non-experimental studies there exist reasons to be concerned about endogeneity bias as a source for our findings. For example, McDonald and Westphal (2003), show that decision makers have a greater tendency to rely on their social ties when firm performance is already low. This poses a potential adverse selection problem for our analysis, because teams frequently acquire players after the beginning of a new season. Specifically, it could be that the negative performance effect of tie-hired-players reflects exclusively on the poor performance that teams already showed before they acquired these players. In this subsection we use two different specifications to address this potential concern.

In the first specification, we exploit an institutional feature of the NBA, namely that seasons in the NBA are divided into a foregoing off-season period between June and October (when team preparation occurs) and a playing period beginning in November. Teams usually acquire their players during the off-season but are allowed to make roster adjustments during the playing period. In the following, we focus only on off-season tie-hired-players and exclude all tie-hired-players who were acquired after the beginning of the playing season. This chronological separation of hiring decisions and the performance generating mechanism (the games) implies that off-season tie-hired-players cannot reflect low performance early in the season. Technically speaking, the timely separation implies that the number of off-season tie-hired-players is predetermined in the team performance regression. Table 5, Model (E1) displays estimation results when we re-estimate equation (1) by only considering games played by off-season tie-hired-players. While the reduction in the number of tie-hired-players leads to a reduction in statistical significance, we still find a negative performance effect that is statistically significant at the 10 percent level. Importantly, Model (E2) shows that this negative performance effect stems exclusively from tie-hired-players that were acquired under weak monitoring. Again, an F-test shows that the coefficients for tie-hired-players across the two monitoring regimes are significantly different ($F=6.99$, $p<0.05$).

In the second specification, we acknowledge that off-season tie-hired-players may partly reflect on the team's sporting performance in the previous season (Moliterno and Wiersema, 2007). This poses a problem for our estimation whenever a team's sporting performance is considerably lower than its long-term average (which is reflected in the team fixed-effects). Therefore, we also estimate two models, in which we control for a team's lagged winning percentage from the previous season ($s\text{-}1$). Table 5, Model (E3) reveals that this variable reduces the statistical significance of tie-hired-players' game appearances. While we still find a negative performance effect in this model, the effect becomes marginally insignificant

(p=0.176). However, Model (E4) provides a simple explanation for this reduction in statistical significance: when controlling for a team's lagged winning percentage, the negative coefficient on tie-hired-players under weak monitoring is still statistically significant at the 5 percent level, but reduces in size (in absolute terms). In contrast, the positive coefficient on tie-hired-players under strong monitoring increases relative to Model (E2) and even becomes statistically significant. Accordingly, an F-test strongly rejects the coefficient equality for tie-hired-players across monitoring regimes ($F=14.18$, $p<0.01$). Taken together, these findings imply that the pooled measure in (E3) must lose statistical significance relative to our findings in Model (E1). We emphasize that while the positive, statistically significant effect from tie-hired-players under strong monitoring seems to support the prediction from social capital theory that the use of social ties can benefit the firm, this finding depends critically on the monitoring incentives for the owner. In addition, some caution seems to be in order as the coefficient is only marginally significant (p=0.099).

Overall, the evidence from these two additional specifications that pose much less scope for endogeneity bias confirms that the reason behind the negative performance effect of tie-hired-players lies in the lack of sufficiently strong monitoring from team owners.

- Insert Table 5 here -

## 6 Conclusion

In this paper, we provide industry-wide evidence on the overall performance effect of employees' use of external strong social ties to others outside the firm. We focus on external social ties to a prominent group of firm outsiders: colleagues at a former employer in the same industry. The fact that such ties are usually strong ties, which persist beyond shared co-working experiences makes them potentially very influential for firm-level decisions. An

important question for firms is therefore whether ties to former employers should be expected to interfere with the selection of transaction partners in decision-making on behalf of the firm.

We add to the existing knowledge by providing an analysis of a unique, naturally occurring panel field dataset that provides a rare opportunity to determine the relevance of employees' external social ties for firm-level decision-making in the field. Based on the complete transaction history between all teams in the National Basketball Association in its current form (34 years), we show that a manager's external, social ties to his past (employers) can harm team performance in the present. The effect is large: controlling for a team's budget and other characteristics, the average tie-hired-player reduces team performance by about 5 percent. We also find that the negative performance effect is entirely driven by managers under team owners with low monitoring incentives. These findings lend support to the idea that - in the absence of appropriate performance incentives - network-based incentives can sometimes undermine firm-level objectives.

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**Appendix**

In this appendix, we consider two extensions of our social tie measure. In the first extension, we include a manager's history as manager *and* coach, as it is not unusual for a manager in the NBA to have formerly worked as a coach with other teams. In the second extension, we acknowledge the possibility that a manager may maintain social ties to his former employers via connections to former colleagues on other levels than coach, manager or owner level. While we believe that a manager's ties to former colleagues at these latter levels are most valuable for player acquisition decisions, we emphasize that this extension provides additional credibility to our findings as it considerably extends the number of tie-hired-players in our sample from N=72 in the main text to N=100 (extension 1) and N=190 (extension 2). However, in constructing this second extension, we face the considerable challenge that complete information on each employee's working history in the NBA is unavailable. Therefore, we assume that a manager has a social tie to another team if he has previously worked as either a manager or coach for that team, irrespective of whether his former colleagues on the coach, manager, or owner level are still with that team. Note that this second extended measure is potentially much more noisy than the measure in our main specification, which is due to the unobservability of social ties to colleagues on other levels. Table A.1 provides summary statistics for both extended measures.

Table A.2 presents estimation results when we replicate our main regression analyses with the extended sets of tie-hired-players, and shows that our key findings are robust to the use of both extensions: besides a statistically significant, negative performance effect of tie-hired-players (Models MA1 and MA3), we also continue to find that only tie-hired-players that were acquired under weak monitoring reduce team performance (Models MA2 and MA4).

## Tables

Table 1: Summary statistics

| Variables | mean | std.dev. | min | max | N |
|---|---|---|---|---|---|
| Panel A: team level | | | | | |
| team winning percentage | 0.50 | 0.15 | 0.134 | 0.878 | 908 |
| team uses tie-hired-player (dummy) | 0.06 | 0.23 | 0 | 1 | 908 |
| games played by tie-hired-players | 49.53 | 43.28 | 0 | 194 | 53 |
| games played by all players | 819.58 | 64.69 | 471 | 944 | 908 |
| players used within season | 16.19 | 2.44 | 11 | 27 | 908 |
| payroll (in mio $) | 36.85 | 23.17 | 2.91 | 101.37 | 700 |
| Panel B: manager level (all managers) | | | | | |
| potential for tie-hiring decisions (over career) | 1.397 | 3.736 | 0 | 20 | 141 |
| number of tie-hiring decisions (over career) | 0.511 | 1.329 | 0 | 8 | 141 |
| number of hiring decisions (over career) | 40.830 | 35.298 | 3 | 186 | 141 |
| share of tie-hiring decisions | 0.011 | 0.045 | 0 | 0.50 | 141 |
| career length (years) | 6.440 | 5.626 | 1 | 25 | 141 |
| Panel C: manager level (managers with social ties in years with social ties) | | | | | |
| potential for tie-hiring decisions | 6.355 | 5.707 | 1 | 20 | 31 |
| number of tie-hiring decisions | 2.065 | 2.097 | 0 | 8 | 31 |
| number of hiring decisions | 38.839 | 29.243 | 4 | 124 | 31 |
| share of tie-hiring decisions | 0.067 | 0.088 | 0 | 0.50 | 31 |
| career years with social ties | 5.613 | 4.652 | 1 | 17 | 31 |

**Notes:** With the exception of payroll (unavailable for 1977/78–1984/85, and in 1989/90), displayed statistics are for the 1977/78–2010/11 seasons.

Table 2: The effect of the use of tie-hired-players (THP) on team performance

| **Variables** | **OLS M1** | **OLS M2** | **OLS M3** |
|---|---|---|---|
| | (1978–2011) | (1986–2011) | (1986–2011) |
| games played by THP | -0.0024*** | -0.0024** | -0.0017** |
| | (0.0008) | (0.0009) | (0.0008) |
| games played by all team players | 0.0010** | 0.0003 | 0.0004 |
| | (0.0004) | (0.0004) | (0.0005) |
| payroll (in $10^6$) | - | 0.0212*** | 0.0179*** |
| | | (0.0055) | (0.0047) |
| players used within season | - | -0.0461*** | -0.0429*** |
| | | (0.0057) | (0.0072) |
| Team fixed-effects | Yes | Yes | Yes |
| Manager fixed-effects | No | No | Yes |
| Observations | 897 | 694 | 694 |

**Notes:** The dependent variable is a team's (logarithmic) regular season winning percentage. All independent variables are measured relative to their league averages in a season. Robust standard errors that have been adjusted for clustering at the team level are given in parentheses. All estimations also included a constant (not reported). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3: Alternative explanations for the negative performance effect

| Panel A: THP as long-term investments? (THP re-definition) | | |
|---|---|---|
| **Variables** | OLS (1986–2011) | |
| games played by THP (complete contract) | -0.0015* | (0.0008) |
| Observations | 694 | |
| **Panel B: good value for money? (salaries of free-agents)** | | |
| **Variables** | OLS (1986–2011) | |
| social tie (dummy) | 0.0488 | (0.1738) |
| Observations | 835 | |

**Notes:** In Panel A, the dependent variable is a team's (logarithmic) regular season winning percentage. The estimation included all control variables as M3 in Table 2. Robust standard errors that have been adjusted for clustering at the team level are given in parentheses. In Panel B, the dependent variable is a player's (logarithmic, inflation-adjusted) salary. The estimation included controls for player age, experience, past performance and salary, as well as fixed-effects for position, and team. Robust standard errors that have been adjusted for clustering on the player level are given in parentheses. All estimations also included a constant (not reported). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4: The performance effect of tie-hired-players (THP): indeed an agency conflict?

| **Variables** | OLS (1986–2011) |
|---|---|
| games played by THP | -0.0020** |
| (acquired under weak monitoring) | (0.0008) |
| games played by THP | -0.0002 |
| (acquired under strong monitoring) | (0.0006) |
| games played by all team players | 0.0004 |
| | (0.0005) |
| payroll (in $10^6$) | 0.0180*** |
| | (0.0047) |
| players used within season | -0.0433*** |
| | (0.0073) |
| Team fixed-effects | Yes |
| Manager fixed-effects | Yes |
| Observations | 694 |

**Notes:** The dependent variable is a team's (logarithmic) regular season winning percentage. All independent variables are measured relative to their league averages in a season. Robust standard errors that have been adjusted for clustering at the team level are given in parentheses. All estimations also included a constant (not reported). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5: Tests for endogeneity: off-season THP and team performance

| **Variables** | **OLS E1** | **OLS E2** | **OLS E3** | **OLS E4** |
|---|---|---|---|---|
| | (1986–2011) | (1986–2011) | (1986–2011) | (1986–2011) |
| games played by off-season THP | -0.0022** | - | -0.0012 | - |
| | (0.0011) | | (0.0009) | |
| games played by off-season THP (acquired under weak monitoring) | - | -0.0027** | - | -0.0018** |
| | | (0.0011) | | (0.0008) |
| games played by off-season THP (acquired under strong monitoring) | - | 0.0004 | - | 0.0012* |
| | | (0.0010) | | (0.0007) |
| games played by all team players | 0.0004 | 0.0003 | 0.0007* | 0.0007* |
| | (0.0005) | (0.0005) | (0.0004) | (0.0004) |
| payroll (in $10^6$) | 0.0180*** | 0.0151*** | 0.0096** | 0.0097** |
| | (0.0047) | (0.0046) | (0.0037) | (0.0037) |
| players used within season | -0.0433*** | -0.0410*** | -0.0417*** | -0.0422*** |
| | (0.0072) | (0.0073) | (0.0068) | (0.0069) |
| lagged team winning percentage (*s-1*) | No | No | Yes | Yes |
| Team fixed-effects | Yes | Yes | Yes | Yes |
| Manager fixed-effects | Yes | Yes | Yes | Yes |
| Observations | 694 | 694 | 689 | 689 |

**Notes:** Displayed are estimation results for extended versions of equation (1). The dependent variable is a team's (logarithmic) regular season winning percentage. All independent variables are measured relative to their league averages in a season. Robust standard errors that have been adjusted for clustering at the team level are given in parentheses. All estimations also included a constant (not reported). The difference in observations between models E1/E2 and E3/E4 relates to the exclusion of five expansion teams' first-year observations (for which a lagged winning percentage is not available). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A.1: Summary statistics: extended social tie measures

| Variables | mean | std.dev. | min | max | N |
|---|---|---|---|---|---|
| Panel A: active ties (including manager's history as coach) | | | | | |
| Team level | | | | | |
| team uses tie-hired-player (dummy) | 0.082 | 0.274 | 0 | 1 | 908 |
| games played by tie-hired-players | 47.892 | 44.422 | 0 | 194 | 74 |
| Manager level (all managers) | | | | | |
| potential for tie-hiring decisions (over career) | 2.085 | 4.252 | 0 | 20 | 141 |
| number of tie-hiring decisions (over career) | 0.709 | 1.641 | 0 | 10 | 141 |
| number of hiring decisions (over career) | 40.830 | 35.298 | 3 | 186 | 141 |
| share of tie-hiring decisions | 0.017 | 0.052 | 0 | 0.50 | 141 |
| career length (years) | 6.440 | 5.626 | 1 | 25 | 141 |
| Manager level (managers with social ties in years with social ties) | | | | | |
| potential for tie-hiring decisions | 6.255 | 5.326 | 1 | 20 | 47 |
| number of tie-hiring decisions | 2.000 | 2.303 | 0 | 10 | 47 |
| number of hiring decisions | 37.851 | 28.532 | 4 | 124 | 47 |
| share of tie-hiring decisions | 0.060 | 0.084 | 0 | 0.50 | 47 |
| career years with social ties | 5.362 | 4.245 | 1 | 17 | 47 |
| Panel B: active ties and non-active ties (including manager's history as coach) | | | | | |
| Team level | | | | | |
| team uses tie-hired-player (dummy) | 0.139 | 0.346 | 0 | 1 | 908 |
| games played by tie-hired-players | 48.690 | 43.577 | 0 | 194 | 126 |
| Manager level (all managers) | | | | | |
| potential for tie-hiring decisions (over career) | 3.773 | 6.725 | 0 | 39 | 141 |
| number of tie-hiring decisions (over career) | 1.348 | 2.826 | 0 | 20 | 141 |
| number of hiring decisions (over career) | 40.830 | 35.298 | 3 | 186 | 141 |
| share of tie-hiring decisions | 0.031 | 0.064 | 0 | 0.50 | 141 |
| career length (years) | 6.440 | 5.626 | 1 | 25 | 141 |
| Manager level (managers with social ties in years with social ties) | | | | | |
| potential for tie-hiring decisions | 8.185 | 7.890 | 1 | 39 | 65 |
| number of tie-hiring decisions | 2.892 | 3.597 | 0 | 20 | 65 |
| number of hiring decisions | 40.569 | 30.889 | 4 | 139 | 65 |
| share of tie-hiring decisions | 0.074 | 0.081 | 0 | 0.50 | 65 |
| career years with social ties | 6.277 | 6.061 | 1 | 22 | 65 |

**Notes:** Displayed statistics are for the 1977/78–2010/11 seasons.

Table A.2: The performance effect of tie-hired-players (THP): extended social tie measures

| | Extension 1: | | Extension 2: | |
|---|---|---|---|---|
| **Variables** | **OLS MA1** | **OLS MA2** | **OLS MA3** | **OLS MA4** |
| games played by THP | -0.0013** | - | -0.0009* | - |
| | (0.0005) | | (0.0005) | |
| games played by THP | - | -0.0015*** | - | -0.0012*** |
| (acquired under weak monitoring) | | (0.0004) | | (0.0004) |
| games played by THP | - | 0.00001 | - | 0.0003 |
| (acquired under strong monitoring) | | (0.0008) | | (0.0009) |
| games played by all team players | 0.0003 | 0.0003 | 0.0003 | 0.0003 |
| | (0.0005) | (0.0005) | (0.0005) | (0.0005) |
| payroll (in $10^6$) | 0.0180*** | 0.0181*** | 0.0181*** | 0.0181*** |
| | (0.0047) | (0.0047) | (0.0047) | (0.0047) |
| players used within season | -0.0427*** | -0.0431*** | -0.0427*** | -0.0425*** |
| | (0.0073) | (0.0073) | (0.0074) | (0.0074) |
| Team fixed-effects | Yes | Yes | Yes | Yes |
| Manager fixed-effects | Yes | Yes | Yes | Yes |
| Observations | 694 | 694 | 694 | 694 |

**Notes:** The displayed estimation results follow our core estimation model (equation (1)). The dependent variable is a team's (logarithmic) regular season winning percentage. All independent variables are measured relative to their league averages in a season. Robust standard errors that have been adjusted for clustering at the team level are given in parentheses. All estimations also included a constant (not reported). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.